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# **Japanese Beetle**



*APPRAISAL SURVEY IN  
NONREGULATED AREAS*

**1958**

**Prepared by**

**Plant Pest Control Division**

**Agricultural Research Service**

**United States Department of Agriculture**

## JAPANESE BEETLE APPRAISAL SURVEY IN NONREGULATED AREAS - 1958

955702

Introduction: This report covers the 1958 Japanese beetle appraisal survey which was conducted in 14 States west and south of the federally regulated area. The survey was requested by the Central Plant Protection Board in a resolution adopted at its February 1958 meeting in Chicago. The major part of the resolution is quoted here:

"THEREFORE BE IT RESOLVED, that the Central Plant Protection Board, in executive session at Chicago, Illinois, February 27, 1958, believes the situation demands that extensively increased efforts be initiated at the earliest possible time to accomplish eradication of all isolated outbreaks of the Japanese beetle now outside of quarantine in midwestern and southern areas of the United States, by Federal, State, and other public and private agencies, and

"BE IT FURTHER RESOLVED that, with the realization that an accelerated effort of this magnitude will involve an extensive increase in funds, as compared to recent annual expenditures by Federal, State, and other agencies, the United States Department of Agriculture be urged to immediately conduct a survey, in cooperation with the Plant Pest Regulatory Officials in the infested States involved, to estimate the probable cost required to meet this need."

State plant pest control and quarantine officials were notified in May that the Agricultural Research Service would undertake the survey with the assistance of State regulatory agencies. To provide the requested information Plant Pest Control personnel drew up the objectives listed below:

- I. Determine and evaluate the importance of the Japanese beetle problem through discussion with State, Federal and related agencies
- II. Population studies
  - A. Determine distribution
  - B. Provide information on population density
  - C. Delimit infestations and provide acreage estimates and other such data to determine feasibility of eradication
- III. Determine effectiveness of eradication and control efforts now in progress or completed
- IV. Determine requirements, mechanics of operation and effectiveness of State regulatory efforts
- V. Discuss State research completed or in progress

The appraisal survey was conducted in the following States:

Georgia	Michigan	Tennessee
Illinois	Missouri	Virginia
Indiana	North Carolina	West Virginia
Iowa	Ohio	Wisconsin
Kentucky	South Carolina	

Conferences were held with State regulatory, research and extension personnel as well as with Plant Pest Control employees and other interested parties. In addition, field observations were made in key areas during the height of beetle activity. Intensification of survey efforts, both detection and delimiting, was stressed throughout the operation. It was believed that a

good record of the distribution and intensity of Japanese beetle in the outlying areas would supply the most substantial basis on which to form program decisions.

One hundred and eleven individuals were contacted. These were State regulatory officials (23), State extension entomologists (13), research entomologists (14), county agents (13), Plant Pest Control personnel (34), and 14 other interested parties. The cooperation of each of these individuals is gratefully acknowledged. Participation of the following Plant Pest Control Supervisors is especially appreciated: R. W. Bills, L. G. Blomgren, A. H. Hagge, J. W. Kelley, J. M. Landrum, C. N. Shepeard, M. E. Turner, W. M. Watson, H. E. Welker.

#### Brief History of Problem

Japanese beetle (*Popillia japonica*) was found at Riverton, New Jersey, in 1916. The intensity of the infestation indicated that it had been introduced several years prior to that time. In this country the pest found climatical, agricultural and ecological conditions highly favorable. So with an abundance of host plants present and its native Japanese parasites absent, the beetle thrived. Multiplication and natural spread were so rapid that a cooperative eradication program was soon abandoned and a more practical program of control and suppression was adopted. In force since 1919, the Federal-State Japanese beetle quarantine program attempts to provide safe, effective and economical compliance procedures with a minimum of interference to regulated industries and the public. Since its inception, this program has been directed toward preventing long-distance spread of the pest. Its success might be indicated by the fact that no remote infestations appeared until the early 1930's although annual surveys were conducted in non-infested States. Also, the number of reported isolated infestations, until recently, has been significantly small.

Currently, the program in the regulated areas involves principally regulatory activities aimed at retardation of spread of the insect to non-infested regions. In isolated infestations outside of Federal quarantine, emphasis is directed toward eradication and control. Such infestations are under State regulations, where necessary, to prevent spread by artificial means.

With the finding of isolated outlying infestations at Detroit in 1932, and at Chicago, Indianapolis and St. Louis in 1934, independent campaigns were undertaken to eliminate or reduce the hazard of spread in these areas and other isolated infestations through application of soil insecticides and foliage sprays. From 1932 through 1958 over 60,000 acres had been soil-treated with lead arsenate, DDT or dieldrin in 11 of the 14 States covered in this report. Almost 1/3 of this total was treated in 1958. This increase was largely due to the availability of low-cost, effective materials and relatively inexpensive application by aircraft. Around 40 acres can be soil-treated for Japanese beetle today for what it cost to treat just one acre with arsenate of lead earlier in the program. Such progress in control has stimulated great interest in the possibility of eradicating isolated infestations.

Another aspect of the Japanese beetle problem that is also attracting considerable attention is the general reduction of populations in the older areas of infestation. It has been known for a long time that beetle infestations build up to a peak over a period of a few years following introduction into a new area, then become greatly reduced, often reaching low, non-economical levels. This phenomenon was first noted about 1926 in the Riverton, New Jersey area and has since been proved repeatedly in other areas. Although heavy infestations continue to appear sporadically within the generally infested areas, light populations have become common in many Eastern States.

It is commonly believed that population reduction has been brought about through the widespread distribution of the bacterial milky disease and imported parasites, particularly tipha wasps. The following statistics would seem to substantiate such opinion. A cooperative program to colonize milky disease in new areas was responsible for treatment of 93,000 acres in 199 counties in 14 Eastern States and the District of Columbia between 1939 and 1950. In the 20 to 25 years prior to 1951, a total of 2,017 colonies of spring tipha had been released in 14 Eastern States and 767 colonies of fall tipha had been released in nine States.

Such relatively recent developments, viz, the availability of low-cost insecticides, better methods of insecticide application and the general reduction of beetle populations in the older areas, indicate the need for a re-evaluation of the Japanese beetle problem, both within and beyond regulated areas. The 1958 appraisal survey attempts to provide objective information that will (1) bring this latter situation more sharply into focus and (2) serve as a useful reference with regard to the current status of the Japanese beetle problem.

There follows a brief State-by-State account of the Japanese beetle situation in the areas covered by this survey.

#### States Under Federal Quarantine

##### NORTH CAROLINA

The Japanese beetle, first found in North Carolina in 1932, has since progressively spread over most of the State. The State was placed under Federal quarantine in 1951. By 1958, 59 counties were under regulation. Of the State's remaining 41 counties, 24 are known to be infested. Most of the larger infestations are classified as moderate to heavy. Those rated as heavy are in Alleghany, Wilkes and Jackson Counties, all in the western part of the State. Moderate populations are reported from 7 additional western counties as well as from Robeson County in the southeastern region where a new area, comprising about 10,000 acres, has developed along U. S. Route 301 just north of the South Carolina line.

The Jackson County infestation might be considered a typical heavy infestation outside of regulation in this State. Although not reported until 1955, the infestation covers 10 percent of the county today according to the county agent. Largely because of severe damage to ornamentals, the beetle is rated the number one plant pest in this community. Buildup has reached the point where larval damage is appearing in lawns. Delimiting observations made in mid-July near Sylva, the county seat, showed beetles and their damage at every stop for a distance of 7 miles. This area is mountainous and supports a relatively small amount of agriculture; however, interstate tourist traffic within and through the area is heavy.

It has been reported that Japanese beetle is responsible for very little crop damage in North Carolina; some local injury to tobacco, soybeans and fruit. The major problem has been on ornamentals around homes. Surveys have been conducted primarily in connection with regulatory problems; therefore, little is known of the general distribution in the nonregulated areas. No nurseries or important shipping points are involved, however. As far as known, no infestations have been eradicated in the State. The major aims of the North Carolina Japanese beetle program are to prevent spread and to reduce infestations through the use of insecticides. Considerable interest is developing in the widespread use of biological controls as a future approach to the problem.

## OHIO

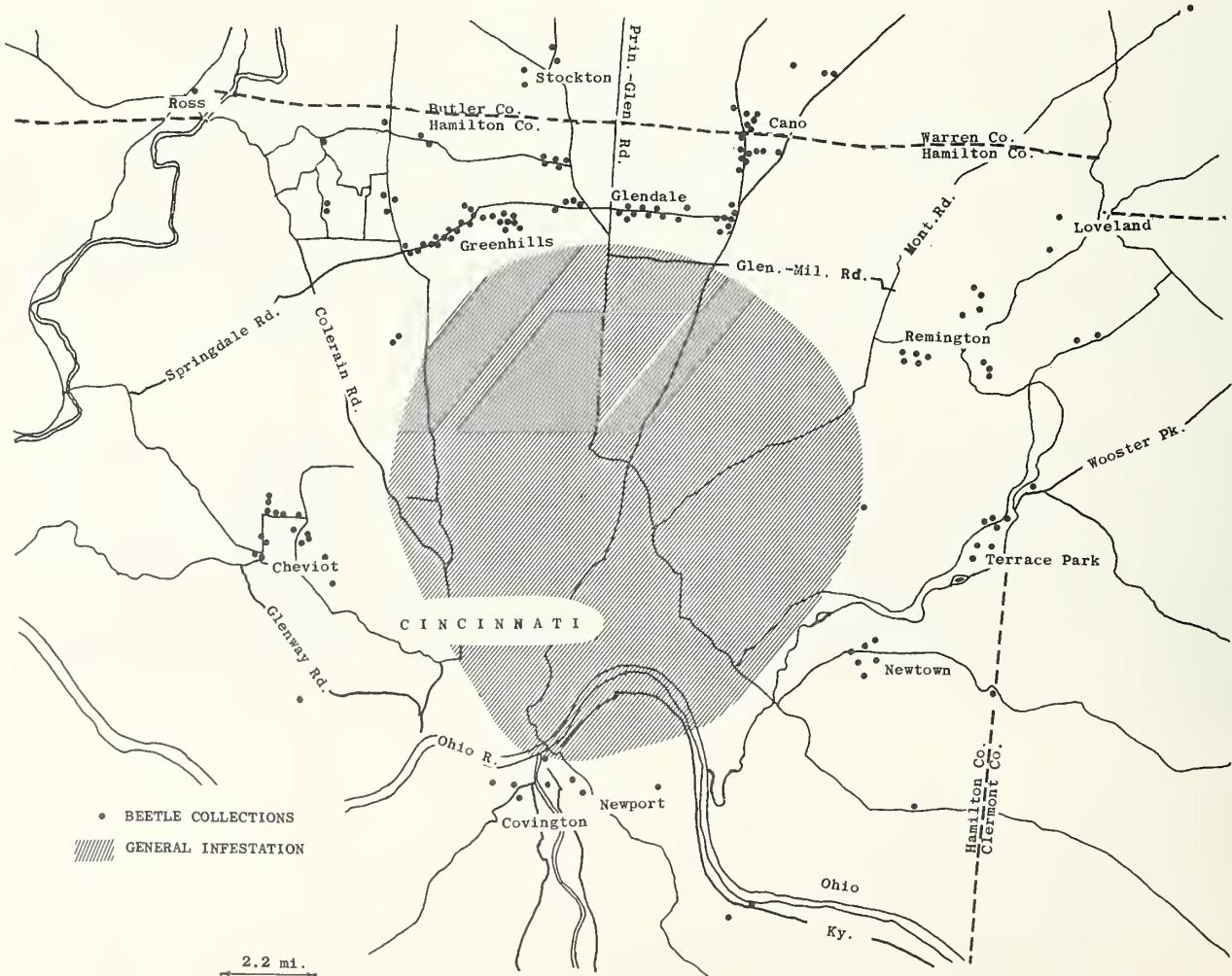
Japanese beetle was first found in Ohio in 1931. The State was placed under Federal quarantine in 1937. Through cooperative efforts the western two-thirds of the State has been kept so free of beetles that it has not been considered necessary to include it under Federal regulations. The infestation at this time is known to involve an estimated 230,600 acres at 34 locations outside of Federal regulation in this State. A total of 9,945 acres has been treated in this area in past years.

The beetle is regarded as the most important Federal-State plant pest regulatory problem in Ohio. Many millions of dollars of produce and nursery business is now under regulation in the State. Populations are heavy enough in some regulated areas to be of concern on corn, fruits, shade and forest trees but the only real trouble spot of major significance outside of the federally regulated area is the large infestation at Cincinnati.

The Cincinnati infestation, first found in 1937, now extends over more than 200,000 acres. Populations are light to heavy but spotty in distribution. A total of 1,267 acres has been soil-treated including 50 plant-growing establishments. Foliage treatments have been applied during 11 years. There are no important produce-shipping points involved. There is great public concern over damage to ornamentals in Cincinnati: the county agent received 240 complaints the first three weeks of July; the Plant Pest Control office had 138 calls in one day. The Hamilton County beetle suppression group and the press are active in promoting control of the pest in this area.

The table on the following page summarizes the status of Japanese beetle in Ohio outside of the federally regulated area.

Japanese Beetle Distribution in the Cincinnati Area - 1958



Summary of Japanese Beetle Survey and Control in Ohio 1933-58

Location of Infestation	First Year Found	No. Beetles Obs.	Popula- tion Density	Estimated Acres	Acres Treated 1958	Total Acres Treated	No. Yrs. Treated	Last Year Found
Ashland	1944	4	Scant	23	23	23	2	1958
Bellefontaine	1952	0	0	0	0	200	4	1956
Bellevue	1942	0	0	0	0	5,850	9	1957
Brice	1949	10	Scant	100	0	13	1	1958
Bucyrus	1940	About 500	Scant	640	51	194	7	1958
Chesapeake	1945	27	Scant	20,000	0	0	1	1958
Chillicothe	1935	N	Mod.	5,000	0	12	12	1958
Cincinnati (Area)			Hvy-					
	1937	N	Light	200,000	27	1,267	11	1958
Circleville	1958	3	Scant	30	0	0	0	1958
Columbia Station	1958	4	Scant	20	3	3	0	1958
Crestline	1942	286	Scant	50	0	105	12	1958
Crown City	1958	19	Mod.	*	0	0	1	1958
Dayton	1954	0	0	0	0	10	3	1954
Doanville	1958	6	Scant	20	5	5	0	1958
Fairbourne	1949	0	0	0	0	2	1	1949
Findlay	1952	0	0	0	0	20	2	1956
Fostoria	1943	0	0	0	0	2	2	1943
Fremont	1952	0	0	0	0	0	1	1953
Gano**	1958	27	Scant	8	2	2	0	1958
Greenfield	1958	2	Scant	15	0	0	1	1958
Hamilton**	1945	11	Scant	0	11	60	2	1958
Holland	1958	1	Scant	10	0	0	0	1958
Hopkinsville**	1958	5	Scant	10	1	1	0	1958
Huron	1958	1	Scant	10	0	0	0	1958
Ironton	1951	80	Scant	1,500	0	142	4	1958
Killbuck-								
Glenmount Area	1957	N	Heavy	*	1	91	0	1958
Lima	1943	0	0	0	0	12	1	1957
Loudenville	1945	Some	Mod.	640	0	3	12	1958
Marion	1942	0	0	0	0	229	8	1957
McArthur	1955	35	Scant	2,000	0	0	2	1958
Milan	1958	21	Scant	50	0	0	0	1958
Millersburg	1941	12	Scant	50	0	141	11	1958
Mitawanga	1958	1	Scant	10	0	0	0	1958
Mt. Vernon	1942	1	Scant	150	11	40	12	1958
Nelsonville	1942	2	Scant	10	0	2	0	1958
Norwalk	1940	3	Scant	0	29	165	6	1958
Portsmouth	1954	49	Scant	200	0	233	5	1958
Rockbridge	1942	0	0	0	0	4	0	1942
Sandusky	1938	0	0	0	0	19	3	1957
So. Lebanon	1958	1	Scant	10	1	1	0	1958
South Point	1952	1	Mod.	*	0	23	1	1958
Springfield	1958	1	Scant	25	0	4	0	1958
Twp Lucas Co.								
Stockton**	1958	3	Scant	10	1	2	0	1958
Sybene	1954	0	Scant	*	0	25	0	1958
Tiffin	1942	1	Scant	10	0	0	0	1958
Van Wert	1941	0	0	0	0	7	0	1944
Warsaw	1958	1	Scant	10	0	0	0	1958
Washington CH	1933	1	Scant	10	0	0	1	1958
Willard	1943	0	0	0	0	1,033	6	1956
Wright Pat.AFB	1948	0	0	0	0	0	2	1948
Totals	:	:	:	230,631	166	9,945	:	:

Single collections have also been made at Bowling Green (1952), Lancaster (1935), Maumee (1946), Middletown (1950), Shelby (1944), Springfield (1945), Wellington (1944), Ross Twp., Lucas Co. (1958).

N - Numerous (over 500). \*Included in Chesapeake area. \*\*Included near Cincinnati area. (1958 fall treatment not included).

#### VIRGINIA

Intensity of Japanese beetle infestations has declined in Virginia in the last few years but spread has continued until the only large beetle-free areas are in the extreme western part of the State. The State was placed under Federal quarantine in 1929. Many of the counties outside of Federal regulation at present are rather generally infested. Among the more heavily infested nonregulated areas are Chilhowie, Galax, Elk Creek, Critz, Lexington, Staunton River in Charlotte and Halifax Counties, James River in Buckingham County and western Appomattox County. Biological control has been widely used in this State and is said to be responsible for the generally low beetle populations.

#### WEST VIRGINIA

Japanese beetle was first found in West Virginia in 1932 at three separate locations. The State was placed under Federal quarantine the following year. Only 3 counties are now known to be beetle-free. Sixteen counties are completely infested while other infested counties have varying populations. All of the major cities are infested. The Japanese beetle is considered the most important insect pest in West Virginia, mainly because of its regulatory aspects. About two-thirds of the damage caused by the pest occurs around homes but there is some crop damage, especially on corn.

#### States Outside of Federal Quarantine

#### GEORGIA

Japanese beetle has not caused economic damage in Georgia but entomologists there fear its spread to the major peach belt where 4 million bushels of peaches were produced in 1958. Orchards in Spaulding and Clayton Counties are already threatened. Most of the infested area in this State is rural. Principal areas are Lumpkin County (Dahlonega) and Atlanta including Atlanta Airport. Currently, attention is directed to survey aspects of the program; very little to control and regulatory. The stepped-up survey has been responsible for uncovering large infested acreages in Georgia during the past two years. The known distribution at Dahlonega and Atlanta was further increased in 1958 and a large urban area involving about 4,800 acres was delimited in Augusta. After the second year of intense survey at Waycross only 2 beetles were found.

Dahlonega, a north central Georgia mountain village, was first found infested with the Japanese beetle in 1945. Over 400 acres were treated in and around the town in late 1956. About 32 acres had been treated up to that time and foliage sprays had been applied during each of 9 years. Prior to attempting further eradication measures, a trapping survey was conducted in 1957 to delimit the infestation. By the end of the season, this work had revealed an estimated 137,000 acres infested. The area extended into Dawson, Hall and White Counties. The season ended before the survey was completed and the work was continued in 1958. Now the beetle is known to involve over 200,000 acres in what was once the Dahlonega infestation. Populations are heavy around the village. Traps located on nearby farms caught 12 to 15 beetles per hour at midday during early July. Foliage damage was very evident. The county is heavily forested and specimens have been trapped along mountain trails throughout the area; however, the population is generally light over most of the infestation. The insect is the county agent's major problem. Complaints to him are generally from homeowners as there is only "patch" farming in the county. Poultry production is one of the main industries and this creates considerable traffic, and opportunity for spread, between the area and markets.

The Japanese beetle infestation at the Atlanta Municipal Airport is the most important one in the State. This infestation, which is heavy on the airport site, extends outward involving East Point, College Park, Hapeville in Fulton County and College Park and Mountain View in Clayton County. Fulton County has 17,860 acres infested and Clayton has 8,610. Both rural and urban areas are involved. A total of 673 acres has been soil-treated in the two counties, mostly at the airport, but much more treatment is needed, especially around the airport where serious populations were observed this past season along the edges of runways. A trap placed at the end of one of the runways caught 150 beetles in three days. One near the terminal caught 40 beetles in one day. Foliage sprays have been applied in each of 11 years at the airport. It is of interest that beetles have been collected in recently soil-treated sites in both Atlanta and Dahlonega indicating that migration back into the areas is occurring.

Summary of Japanese Beetle Survey and Control in Georgia 1937-58

Location of Infest.	:First: Yr.	No. Beetles: Trapped or: Found: Obs.-1958	Population: Density	Est. Acres	: Acres 1958	Tot. Acres	No. Treated	Yrs. Treated
<b>(By County)</b>								
Clayton	: 1939:	Numerous	Heavy	8,610:	44	44	:	1
Cobb (Austell, Dobbins AFB)	: 1945:	250	Light	3,110:	0	7	:	8
Dawson	: 1957:	Numerous	Lt. to Hvy.	31,000:	0	0	:	0
DeKalb* (Doraville)	: 1940:	25	Light	150:	0	7	:	0
Fulton	: 1937:	Numerous	Lt. to Hvy.	17,860:	0	631	:	11
Hall (Gainesville)	1957:	Numerous	Lt. to Hvy.	18,300:	0	0	:	0
Lumpkin (Dahlonega, et al)	: 1945:	Numerous	Lt. to Hvy.	158,380:	0	453	:	9
Stephens (Toccoa)	: 1940:	25	Light	450:	0	26	:	0
Richmond (Augusta)	: 1957:	Numerous	Light	4,800:	0	0	:	0
Rabun (Clayton)	: 1958:	1	Scant	0:	0	0	:	0
White	: 1957:	Numerous	Lt. to Hvy.	6,100:	0	0	:	0
Ware (Waycross)	: 1956:	2	Scant	200:	0	0	:	0
<b>Totals</b>	:	:		<b>: 248,960:</b>	<b>44</b>	<b>1,168</b>	:	

\*Last found at Chamblee 1941

ILLINOIS

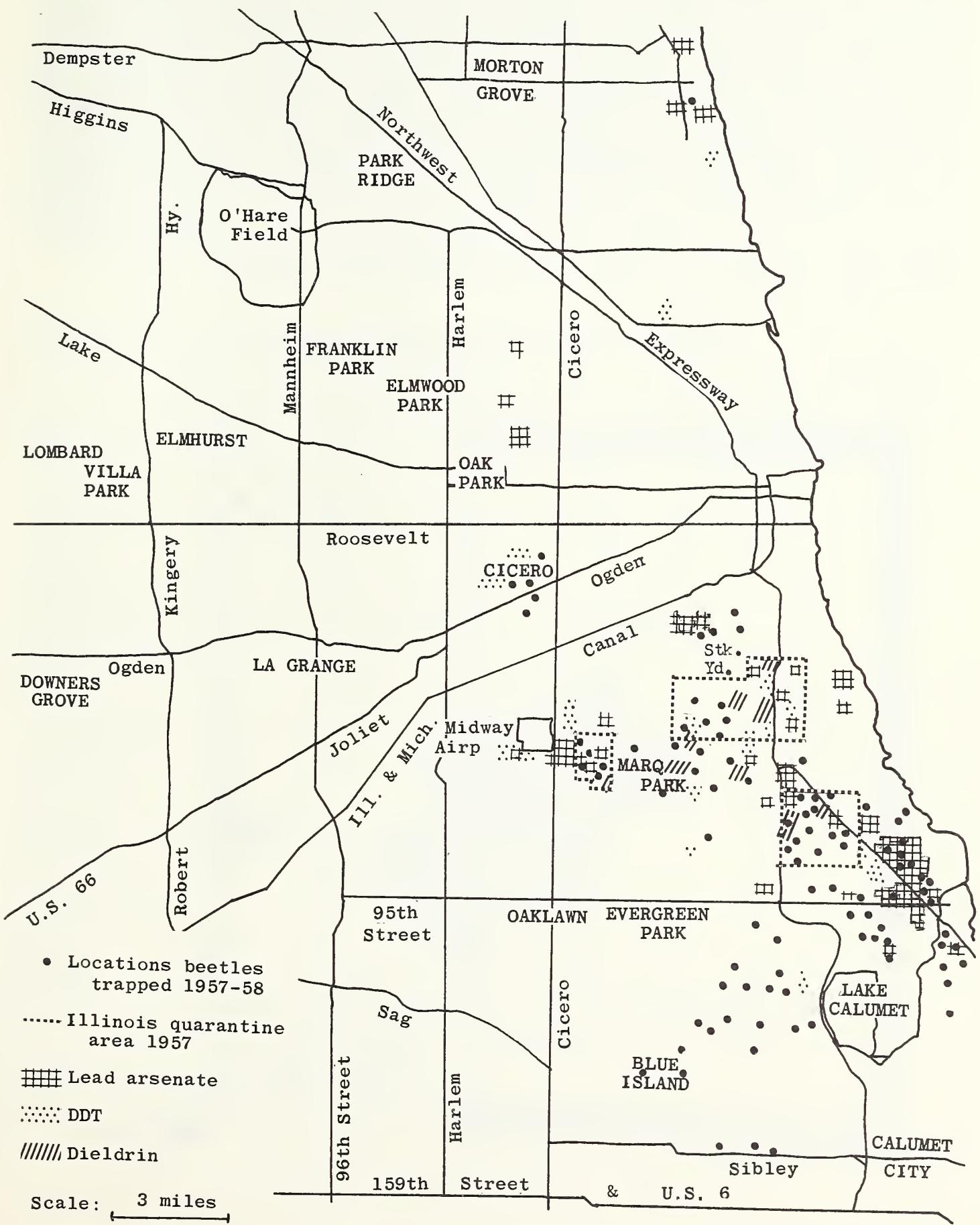
Japanese beetle is considered by State officials to be the number one plant pest control and regulatory problem in Illinois. Sheldon with around 41,000 acres and Chicago with 50,000 are the major areas of infestation in the State; however, the new development this year in the Blue Island section of the South Chicago suburbs is of great concern. This infestation is known to involve about 10,000 acres although it has not been fully delimited. Since 1934, over 25,000 acres have been effectively soil-treated in Illinois. Infestations have not been known to build up in the treated areas, even those treated years ago with lead arsenate. Some believe that if treatment had been started from the perimeter inward in the Sheldon area that the infestation could have possibly been knocked out by now providing the adjacent Kentland, Indiana area had received similar treatment.

Summary of Japanese Beetle Survey and Control in Illinois 1934-58

Location of Infest.	:First: Yr.	No. Trapped or Found:	Beetles: Obs.-1958	Population: Density	Est. Acres: Acres	1958 : Tr. * 1958	Tot. Acres: Soil Treated	No. Foliage Treated	Yrs.
Bedford Park	: 1958:	2		Light				0	
Berwyn	: 1957:	1						0	
Bloomington	: 1941:				0			0	
Blue Island	: 1958:	Numerous		Hvy-Light	10,000			0	
Chicago	: 1934:	326			: 50,000			1,777	
Cicero	: 1937:	17			: 500			16	
Decatur	: 1949:	7		Light	: 400			373	
E. St. Louis area	: 1934:	43		Light	: 1,000	: 4,520		4,897	
E. Peoria	: 1958:	5						0	
Elgin	: 1937:	0			: 0			0	
Evanston	: 1937:							22	
Forest View	: 1957:							105	
Granite City	: 1953:			Light	: 10	: 13		13	
Highland Park	: 1941:	23		Light	: 500			152	
Joliet	: 1958:	1						0	
Kankakee	: 1958:	2						0	
Morrison	: 1958:	1			: 0			0	
Oak Park	: 1940:				: 0			0	
Sheldon	: 1953:	Numerous		Hvy-Light	41,000	: 8,195		17,844	
Stickney	: 1957:	5		Light	: 15			17	
Streator	: 1958:	40							
Summit	: 1947:							0	
Totals	:				103,425	12,728		25,216	

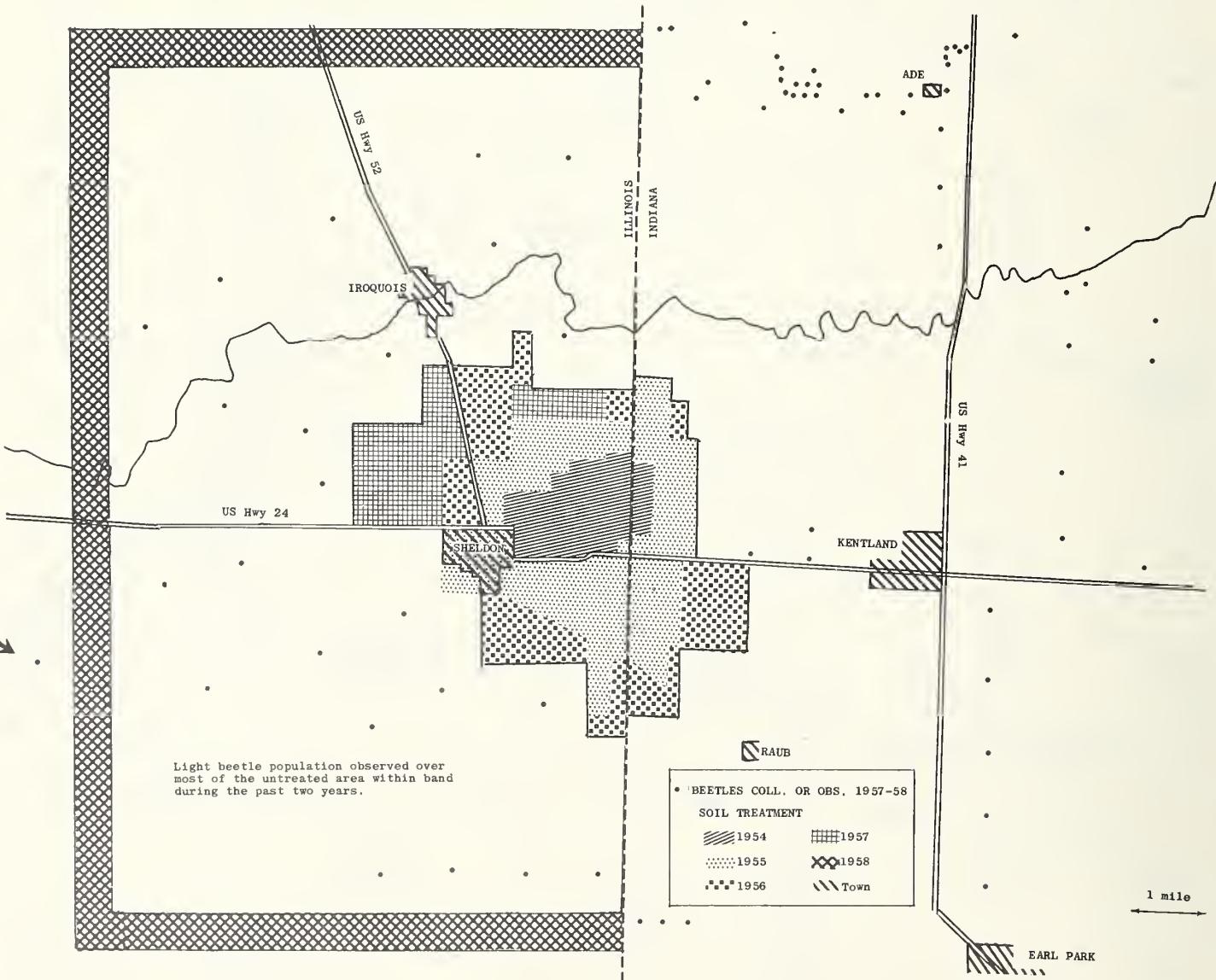
\*Fall treatment totals not included.

STATUS OF JAPANESE BEETLE IN CHICAGO 1934-58



The Sheldon-Kentland infestation, reported in 1953 by a Sheldon grain elevator operator, was the first large rural area found outside of the regulated zone. Surveys following the report showed a widespread, light to heavy, infestation extending into Newton County, Indiana. Several thousand acres of corn and soybean lands were involved. The "core" of the infestation was treated the following spring and additional treatments have been made each year since on the Illinois side but no treatment has been done in the Indiana part of the infestation since 1956. A new approach to control in this area was decided on by Illinois and Federal personnel in 1958. It involved application of insecticide in a one-half mile wide band around the outside of the Sheldon infestation. This perimeter treatment was designed to halt outward spread. To increase its effectiveness the State has regulations in operation within the area outlined by the band. Trapping outside of the band this past season indicated that this type of treatment may be very successful. Although single beetles were found at two widely separated locations outside of the treated area, they may represent isolated occurrences and not a continuation of the main infestation. A total of 17,844 acres has been treated in the Illinois part of the area and about 41,000 additional acres need treatment. On the Indiana side, 3,649 acres have been treated and an estimated 64,000 acres need eradication measures.

Japanese Beetle in Sheldon-Kentland Area



INDIANA

The Japanese beetle was first found in Indiana at Indianapolis in 1934. Since then infestations have appeared in 29 locations in 14 counties. All nurseries in or near infested areas have been soil-treated. Almost 9,000 acres have been soil-treated in the State over the years. The foliage treatment program has been continued to reduce the hazard of spread. State officials consider several of the larger infestations beyond practical chemical control. Among these are Kentland, South Bend, Logansport, Indianapolis, Fort Wayne and Terre Haute. With the exception of Kentland, these areas have much in common. Large railroad yards are involved in each case. The infestations are mostly urban but extend out into rural areas at South Bend, Logansport, Indianapolis and Terre Haute. Some treatment has been done in each of these cities.

Summary of Japanese Beetle Survey and Control in Indiana 1934-58

Location of Infest.	First Found:	No. Obs.	Beetles Trapped or -1958	Population Density	Est. Acres 1958	Acres Tr. 1958	Tot. Acres Treated	No. Yrs. Treated
Argos	: 1957:	44	:	Moderate	240	44	220	:
Bluffton	: 1939:	:	:	:	:	:	0	:
East Chicago	: 1938:	35	:	Moderate	1,000	:	0	:
Elkhart	:	:	:	:	:	:	:	:
Osceola	: 1938:	356*	:	Heavy	26,880	:	321	:
Fort Wayne	: 1936:	44*	:	Heavy	5,760	:	624	:
Garrett	: 1957:	12	:	Light	320	6	6	:
Gary	: 1948:	0	:	:	:	:	10	:
Goshen	: 1958:	9	:	Light	80	:	0	:
Hammond	: 1941:	19	:	Moderate	384	:	106	:
Huntington	: 1958:	5	:	Light	1,125	:	0	:
Indianapolis	: 1934:	39*	:	Heavy	1,920	:	510	:
Jeffersonville	: 1950:	:	:	:	:	:	0	2
Kendallville	: 1957:	0	:	:	:	6	6	:
Kentland	: 1954:	36*	:	Heavy	64,000	:	3,649	:
Lafayette & W.Lafayette	: 1958:	289	:	Lt.-Hvy	6,000	:	:	0
Logansport	: 1937:	37*	:	Heavy	15,360	:	595	:
Muncie	: 1939:	:	:	:	:	:	0	:
New Castle	: 1940:	:	:	:	:	:	4	:
Plymouth	: 1954:	171	:	Moderate	1,000	:	110	:
Remington	: 1957:	0	:	:	:	5	5	:
Richmond	: 1939:	3	:	Light	100	:	88	:
South Bend (Mishawaka & Granger)	: 1936:	260*	:	Heavy	64,000	:	1,307	:
Terre Haute	: 1941:	2	:	Moderate	16,000	:	946	:
Wanatah	: 1955:	27	:	Light	360	38	317	:
Warsaw**	: 1939:	0	:	:	:	:	31	:
Whiting	: 1939:	:	:	Light?	:	:	17	:
Totals	:	:	:		204,529	99	8,872	:

\* No trapping done in heavy areas.

\*\* Last year found 1939.

(1958 fall treatment not included).

IOWA

The first established infestation of Japanese beetle in Iowa was found at Ft. Madison in 1957. Ft. Madison is located on the Mississippi River in the southeast corner of the State. Two-thousand acres were cooperatively treated at this location in March, 1958. Of the 142 beetles collected this past season at Ft. Madison, 7 were outside of the treated area. The new sites, involving 48 acres, have been treated or are scheduled for treatment this winter.

KENTUCKY

Japanese beetle is regarded in Kentucky as one of the most serious pests the State has had to face. It could become the number one farm pest due to the grassland agriculture. Economic damage has not occurred in Kentucky, however, and intense effort has been made to suppress infestations, especially in the Louisville area and in Greenup and Pike Counties. The beetle was first found in the State in 1936.

Pikeville is a new problem area to plant pest control officials in Kentucky. This infestation was reported in late 1957 by the county agent but its importance was not revealed until this past season. Delimiting surveys showed an estimated 200,000 acres infested in this rugged mining area. No commercial produce production or plant-growing establishments are involved, however. The State obtained insecticide for treating 2,100 acres in the valleys, principally along U. S. Route 119 which is the chief source of spread in the area. The material was applied through State, Federal and local efforts during the middle of September. The treated area is considered adequate for suppression purposes.

Summary of Japanese Beetle Survey and Control in Kentucky 1936-58

Location of:	First:	No.	Beetles:	Pop.	: Est.	: Acres	: Tot.	Acres	: N.Yrs.:	Last Yr.
Infest.	: Yr.	:	Trapped or:	Dens.	: Acres	: Treated	: Soil	: Fol.	:	Found
			: Found:	Obs.-1958	:	: 1958	: Treated	: Tr.	:	
Covington	1/ 1949:	50	: Scant	: 12,000:	100	2/:	48	:	3	: 1958
Fullerton	1958:	16	: Scant	: 630:	20	2/:				: 1958
Lexington	1936:		:	:						: 1938
Louisa	1958:	1	: Scant	: 5:	5	2/:				: 1958
Louisville	1936:	55	: Scant	: 7,600:	73		2,043	:	7	: 1958
Pikeville	1957:	Numerous	: Scant	200,000:	2,100		2,100			: 1958
			: to Hv.:							
Russell-West	1950:						1,778	:	5	: 1956(?)
Russell	3/									
Silver										
Grove	1958:	1	: Scant	: 8:	8	2/:				: 1958
Totals				: 220,243:	2,306	:	5,969			

1/ Covington includes Bellevue, Bromley, Dayton, Ft. Thomas, Ludlow and Newport.

2/ Scheduled to be treated.

3/ Russell-West Russell includes Flatwoods, Raceland and Worthington.

MICHIGAN

Although the Japanese beetle has been known in Michigan since 1932, it has been controlled almost to the point of eradication through an aggressive program. If it had been allowed to build up, quarantine operations involving millions of dollars in nursery and produce business would be required. It is Michigan's policy to soil-treat the site of every beetle found, regardless of sex, as soon as possible following discovery. The work is facilitated through close cooperation of State, Federal and local agencies. The State has had many examples of successful eradication as indicated in the table below.

A total of 164 beetles was collected in 9,175 traps in Michigan during 1958 compared with 184 in 8,244 traps in 1957. The beetles were taken in 89 traps in 1958 and 109 in 1957. As in the past, all infested sites have been treated. A total of 212 acres was involved in 1958.

Summary of Japanese Beetle Survey and Control in Michigan 1932-58

Location of Infestation	First year Found	No. Beetles Trapped or Obs. -1958	Est. Acres	Acres Tr.: 1958	Totl. Acres Treated	Last Yr. Found
Battle Creek	1955	:	:	:	2	: 1955
Benton Harbor	1955	1	2	2	4	: 1958
Birmingham	1939	:	:	:	14	: 1939
Coloma	1954	:	:	:	715	: 1954
Delhi Twp. (Ingham Co.)	1958	17	8	8	8	: 1958
Detroit	1932	108	121.3	121.3	1948*	: 1958
Allen Park	1955	4	15	15	15	: 1958
Dearborn	1936	3	9	9	83	: 1958
Ecorse	1945	:	:	:	20	: 1957
Farmington	1954	:	:	:	304	: 1955
Ferndale	1952	:	:	:	22	: 1954
Grosse Pt. Farms	1939	:	:	:	2	: 1955
Grosse Pt. Park	1947	:	:	:	66	: 1951
Grosse Pt. Vlg.	1948	:	:	:	59	: 1951
Grosse Pt. Woods	:	:	:	:	2	: 1954
Hamtramck	1955	:	:	:	7	: 1955
Highland Park	1938	:	:	:	1	: 1938
Lincoln Park	1942	1	5	5	23	: 1958
Melvindale	1939	21	25.8	25.8	148	: 1958
River Rouge	1942	3	8	8	181	: 1958
Van Dyke	1954	:	:	:	2	: 1954
Wyandotte	1946	:	:	:	15	: 1957
Flint	1942	:	:	:	95	: 1952
Grand Rapids	1945	1	3	3	502	: 1958
Kalamazoo	1945	:	:	:	127	: 1955
Flat Rock	1955	:	:	:	3	: 1955
Lansing	1955	:	:	:	419	: 1957
Monroe	1955	1	3.5	3.5	3.5	: 1958
Muskegon	1945	:	:	:	15	: 1956
Niles	1954	1	3	3	264	: 1958
Owosso	1948	:	:	:	1	: 1948
Pontiac	1938	:	:	:	:	: 1938
Wayne	1955	3	9	9	18	: 1958
<b>Totals</b>		<b>164</b>	<b>212</b>	<b>212</b>	<b>5,090</b>	

\* Foliage treatment one year at Detroit.

MISSOURI

The Japanese beetle was found in St. Louis in 1934. A total of 596 acres was soil-treated in this area in 1934-35. Since then only small numbers of beetles have been collected. No other infestations are known in the State. Only 92 beetles were collected in about 1,600 traps and by hand in 1958. Seven sites are involved in the eastern part of the city. The sites, comprising about 160 acres, have been treated or are scheduled.

Summary of Japanese Beetle Survey and Control in Missouri 1934-58

Location of Inf.	First Found	No. Trapped or Obs.	Pop. -1958	Est. Dens.	Acres : 1958	Acres Tr. : Treated	Tot. Acres Soil Treated	No. Yrs. Tr.	Last Year Found
Kansas City:									
Airport	1944						2		1944
St. Louis	1934	92		Mod.	80	160	859	3	1958
Lambert Field	1940						13	9	1948
Bridgeton	1949								1949
Ladue	1951						18		1952
Maplewood	1952						4	1	1952
Robertson	1948								1948
Totals					80	160*	896		

\*All scheduled but not completed by end of year.

SOUTH CAROLINA

Japanese beetle is regarded by South Carolina officials as a serious threat to the 4.9 million bushel peach industry in that State. Infestations in the northwestern counties are approaching the orchard area. Although no measurable damage has occurred in South Carolina, the pest is regarded as both a regulatory and agricultural problem.

Although infestation was reported in 3 new counties in 1958, the major problem area in this State remains in the northwest counties and involves a southward extension of the heavy infestation from adjacent regulated areas of western North Carolina. Around 300,000 acres in the northern parts of Spartanburg, Greenville, Pickens and Oconee Counties are involved, in addition to spot infestations in and around the cities of Spartanburg and Greenville. While the populations are generally medium in this section, there are some heavy locations where as many as 100 beetles may be gathered in one spot. Foliage injury is readily noticeable on roadside hosts in this mountainous and wooded country.

Considerable truck, particularly corn and beans, is grown in the valleys. The only nursery in the area that is considered to be a source of spread is under State regulation. This is located at Travelers Rest.

The table on the next page summarizes Japanese beetle survey and control in South Carolina, 1931-58.

Summary of Japanese Beetle Survey and Control in South Carolina 1931-58

Location of Infest.	First Found:	No. Beetles Obs.-1958	Pop. Trapped or	Estimated Dens.:	Tot. Acres Acres	Soil Treated	Foliage Treated:	No. Yrs. Found	Last Yr.
Bennetts-ville	1958	Numerous	Light	100					1958
Charleston	1931	0		0		12			1943
Charleston Airport	1945	0		0					1946
Columbia	1942	0		0					1956
Dillon	1955	2	Light	50					1958
Florence	1932	0		0		5			1950
Florence Airport	1952	0		0					1952
Greenville County 1/ (northern)	1933	Numerous	Heavy	185,600		23		3 2/	1958
McColl	1958	Numerous	Light	50					1958
N. Augusta	1958	4	Light						1958
Oconee County	1958	Numerous	Medium	17,280					1958
(northeastern)									
Pickens County	1957	Numerous	Medium	112,640		14		1	1958
(northern)									
Spartanburg County 3/ (northern)	1941	Numerous	Medium	14,580					1958
Totals				330,300		54*			

1/Includes spotted infestations in or near city of Greenville.

2/Foliage treatment at Travelers Rest.

3/Includes spotted infestations in city of Spartanburg.

\*No soil treatment reported for 1958.

#### TENNESSEE

If Japanese beetle became widely established in Tennessee, the large number of nurseries would create an immense regulatory problem and the vast acreage in pastures would encourage rapid infestation development. At the beginning of 1958, it was believed that there were no known active infestations in the State; however, during the past season the beetle was found in several areas. The most important of these were the new locations at Knoxville (urban) and Butler (rural). Beetles were also found outside of the treated area in Mountain City. With the exception of infested sites in Bristol, a city that encompasses infestation also on the Virginia side of the border, all infestations in Tennessee were treated during the fall of 1958.

The table on the next page summarizes Japanese beetle survey and control in Tennessee, 1936-58.

Summary of Japanese Beetle Survey and Control in Tennessee 1936-58

Location of Inf.	First Inf. Yr.	No. Beetles Found	Pop. Obs.-1958	Trapped or Density	Est. Acres	Acres Treated 1958	Tot. Acres Soil Treated	Last Yr. Found
Bristol	1936	4		?	?			1958
Butler	1958	Numerous		Light	1,070	1,070	1,070	1958
Chestnut Hill	1956	?		Light	7	7	50	1958
Johnson City	1958	1		Trace	?			1958
Kingsport	1943						7	1943
Knoxville	1958	Numerous		Light	1,000	1,000	1,000	1958
Mountain City	1944	16		Trace	30	167	949	1958
Newport	1956	5		Light	5	12	30	1958
Rogersville	1958	1		Trace	?			1958
Seiverville	1956	?		Light	3	3	21	1958
Tellico Plains	1956	10		Light	100	100	100	1958
Totals					2,215	2,359	3,227	

### WISCONSIN

One beetle was found in the Milwaukee area in 1956 and 2 in 1957. One beetle was also found at Sturtevant in 1957. The areas were soil-treated. No beetles were collected in 1958. These finds could have been "hitchhikers."

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### SUMMARY

In answer to a request by the Central Plant Protection Board, the Plant Pest Control Division and the affected States conducted a Japanese beetle appraisal survey in the southern and midwestern areas not regulated by Federal quarantine during the summer of 1958. This work involved increased survey activities and special field observations in 14 States. In addition, the problem was discussed with more than 100 State-Federal officials, mostly regulatory, research and extension, in the different areas.

The survey shows the Japanese beetle to be widely scattered in the outlying States and it continues to appear in new areas. Thirty-one new locations, exclusive of single beetle finds, were reported during the year. The insect is now known to occur in 118 counties, involving 13 States, south and west of the Federally regulated area. Although some of the infestations are heavy, most are still light and scattered. No significant amount of damage from Japanese beetle was reported in the outlying areas. While the insect is regarded as a highly important pest from the regulatory standpoint and is often referred to as a potential major crop pest, most reports and complaints being received by entomologists and extension workers in the nonregulated areas are from homeowners who complain of damage to ornamentals.

The situation in the 14 States may be classified as follows:

1. States in which all known infestations have received eradication treatments or are scheduled for treatment. These include Iowa, Michigan, Missouri, Tennessee and Wisconsin. (No beetles were found in Wisconsin in 1958).
2. States in which the situation is believed to be too complex and extensive for eradication considerations and the "live with" attitude is being followed. North Carolina, Virginia and West Virginia may be placed in this category.
3. States having large acreages needing control, eradication or regulatory action. Six States with a total estimated infested acreage of 1,338,000 belong in this classification. They are Georgia, 249,000; Illinois, 103,000; Indiana, 204,000; Kentucky, 220,000; Ohio, 231,000; South Carolina, 330,000. It is of interest that four infestations in this group (Dahlonega, Georgia; Pikeville, Kentucky; Cincinnati, Ohio and northwestern South Carolina) contain about two-thirds or 930,000 acres of the total infested acreage.

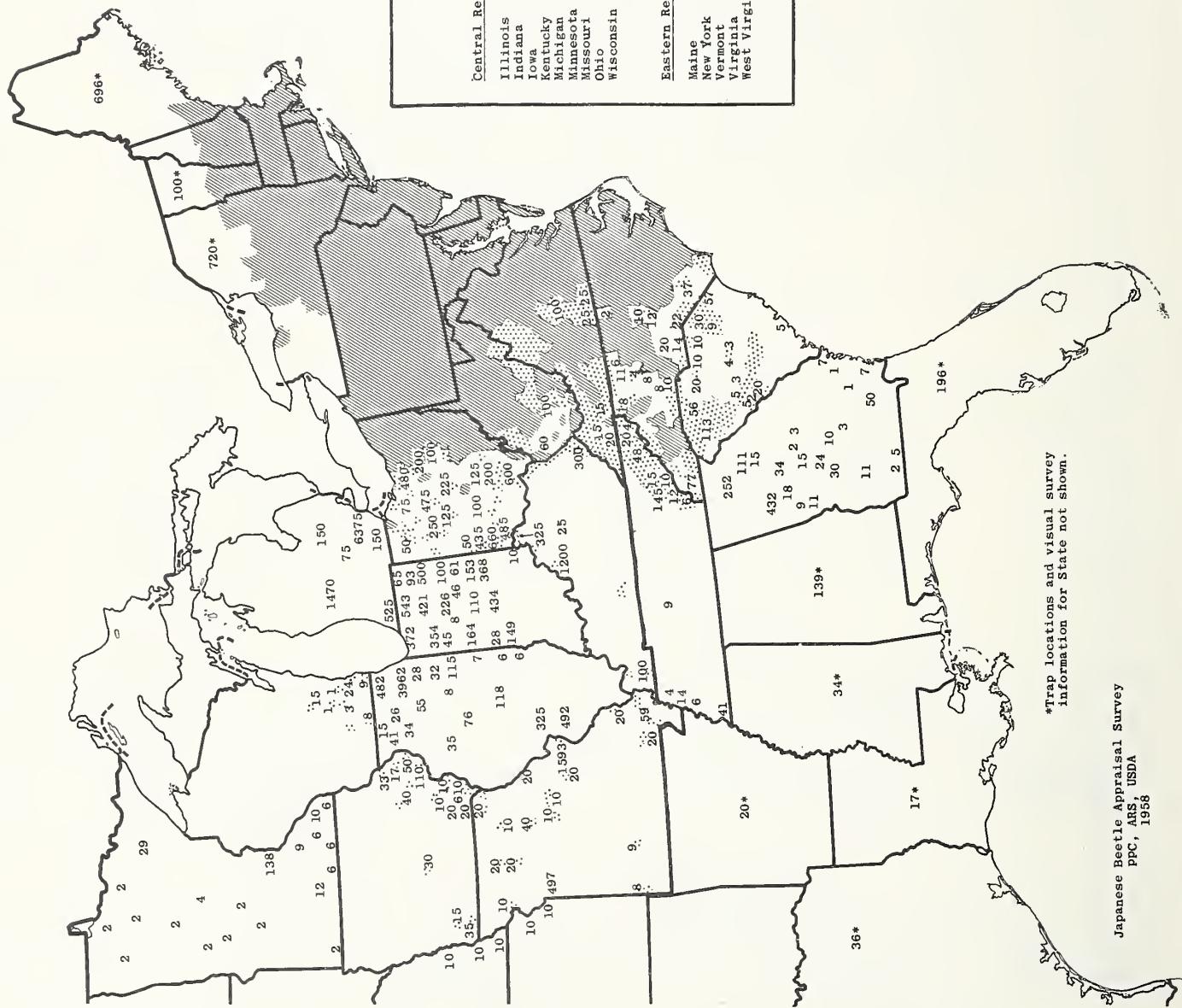
Summary of Japanese Beetle Survey and Control Outside Regulated Areas  
1932-1958\*

Location of Inf.	First Yr. Found:	Major Areas	Pop. Dens.: 1958	Est. Acres	: Acres Tr.: 1958	Cum. Acres Soil Treated
Georgia	:	Dahlonega, Atlanta	Lt.-Hvy	248,960	44	1,168
Illinois	: 1934	Sheldon, Chicago, E. St. Louis	Lt.-Hvy	103,425	12,728	25,216
Indiana	: 1934	Kentland, South Bend, Logansport, Indpls., Terre Haute, Elkhart	Lt.-Hvy	204,529	99	8,872
Iowa	: 1957 (Estab.)	Ft. Madison	Medium	Scheduled	2,048	2,048
Kentucky	: 1936	Pikeville, Louisville, Covington	Lt.-Hvy	220,243	2,306	5,969
Michigan	: 1932	Detroit	Scattered	Treated	212	5,090
Missouri	: 1934	St. Louis	Medium	Tr. or Scheduled	160	1,056
Ohio	: 1931	Cincinnati, Chillicothe	Lt.-Hvy	230,631	166	9,945
South Carolina	1931	Northwestern Counties	Lt.-Hvy	330,300	0	54
Tennessee	: 1936	Knoxville, Butler	Light	Treated	2,359	3,227
Wisconsin	: 1956 (1 beetle)	No beetles in 1958	No beetles	0	0	4
Totals	:			1,338,288	20,122	62,649

\*Infestations too extensive to list in North Carolina, Virginia or W. Virginia.

# JAPANESE BEETLE SURVEY AREAS IN OUTLYING STATES - 1958

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\*Trap locations and visual survey information for State not shown.

# JAPANESE BEETLE

1958











